
New Species of *Daphnopsis* (Thymelaeaceae) from Panama

Kerry Barringer

Brooklyn Botanic Garden, 1000 Washington Avenue,
Brooklyn, New York 11225-1099, U.S.A.

Lorin I. Nevling, Jr.

Illinois Natural History Survey, 607 E. Peabody Drive, Champaign, Illinois 61820, U.S.A.

ABSTRACT. *Daphnopsis folsomii*, *D. hammellii*, and *D. morii* are described and illustrated. A key to the Panamanian species of Thymelaeaceae is provided.

For many years only one species of *Daphnopsis* C. Martius & Zuccarini, *D. americana* (Miller) Johnston, was known in Panama (Nevling, 1959; Woodson, 1958). A second species, *D. correae* Barringer & Nevling, was added recently (Nevling &

Barringer, 1986). The three species described here increase the number of species known from Panama to five. One species of *Schoenobiblus* C. Martius & Zuccarini, *S. panamensis* Standley & L. O. Williams, is known from Panama. *Daphnopsis americana* and *S. panamensis* are lowland species and are relatively widespread. The rest of the species are found in upland regions, and their distributions appear to be discrete (Fig. 4).

KEY TO THE SPECIES OF THYMELAEACEAE IN PANAMA

- 1a. Calyx lobes longer than the tube; stamens exerted, filaments > 1 mm long *Schoenobiblus panamensis*
- 1b. Calyx lobes shorter than the tube; stamens included or borne at the mouth, filaments < 1 mm long, (*Daphnopsis*).
 - 2a. Inflorescence a dichotomously branched umbel; antisepalous stamens borne on calyx lobes*D. americana* subsp. *caribaea*
 - 2b. Inflorescence capitate or racemose; antisepalous stamens borne at or just below the mouth of the hypanthium.
 - 3a. Calyx bicolored; disc lobulate*D. correae*
 - 3b. Calyx unicolored; disc annular.
 - 4a. Tree; staminate inflorescence racemose, primary peduncles 2–2.5 cm long; leaves 4–13 cm long*D. hammellii*
 - 4b. Shrub; staminate inflorescence a capitulum, primary peduncles 0.1–0.8 cm long; leaves 13–21 cm long.
 - 5a. Pedicels 2–5 mm long; leaves often glaucous*D. morii*
 - 5b. Pedicels to 1 mm long; leaves green below*D. folsomii*

Daphnopsis folsomii Barringer & Nevling, sp. nov. TYPE: Panama. Darién: Cerro Pirre, 10–20 July 1977, *Folsom 4543* (holotype, MO). Figure 1.

Species *D. hammellii* foliis glabris inflorescentiis bracteis flores subsessilis stylis 4 mm longis differt.

Subshrub, 0.5–2 m tall; bark brown; stems dichotomously branched, glabrous. Leaves alternate; petioles 0.7–1.5 cm long, slightly thickened, glabrous; blade oblanceolate to obovate, 12–25 cm long, 4.5–11.5 cm wide, subcoriaceous to coriaceous, glabrous, green above, lighter below, the base cuneate, the apex acuminate, the venation obscure above, prominent below. Staminate inflorescence not seen. Pistillate inflorescence terminal, capitate, sericeous, the rachis 2–4 mm long, the secondary peduncle 1 mm long, many-flowered, the bracts

lanceolate, 5–7 mm long, sericeous above, keeled, acuminate. Pistillate flowers 10–15 per inflorescence; pedicel less than 1 mm long; hypanthium tubular, 5 mm long, 1–2 mm wide, sericeous; calyx lobes triangulate, 2 mm long, 1 mm wide at the base, recurved, glabrous within, with a tuft of trichomes at the apex; staminodes 4, minute; disc annular, less than 1 mm tall; pistil 4–6 mm long, borne on a gynophore 0.5 mm long, the style 4 mm long, exerted, the stigma capitate. Fruit white, ovoid, 15–20 mm long, 6–12 mm wide, the apex rounded.

This species is named for James Folsom of the Huntington Botanical Gardens. It is known from Cerro Pirre in the eastern Darién Province and from the vicinity of Alto Calvario, north of El Copé in the Coclé Province (Fig. 4). We know of no explanation for this apparent disjunction.

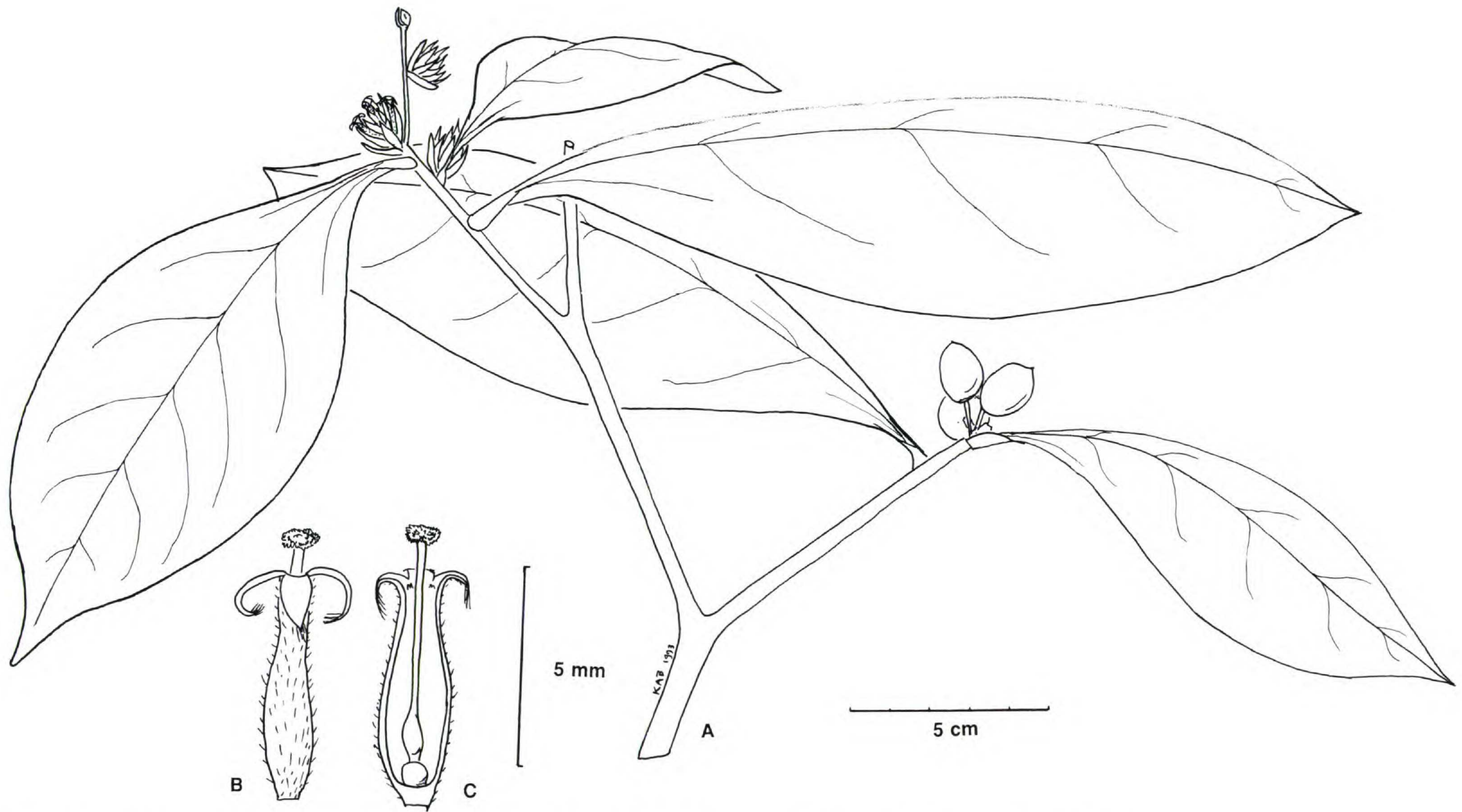


Figure 1. *Daphnopsis folsomii* Barringer & Nevling. —A. Habit. —B. Female flower. —C. Longitudinal section of female flower.

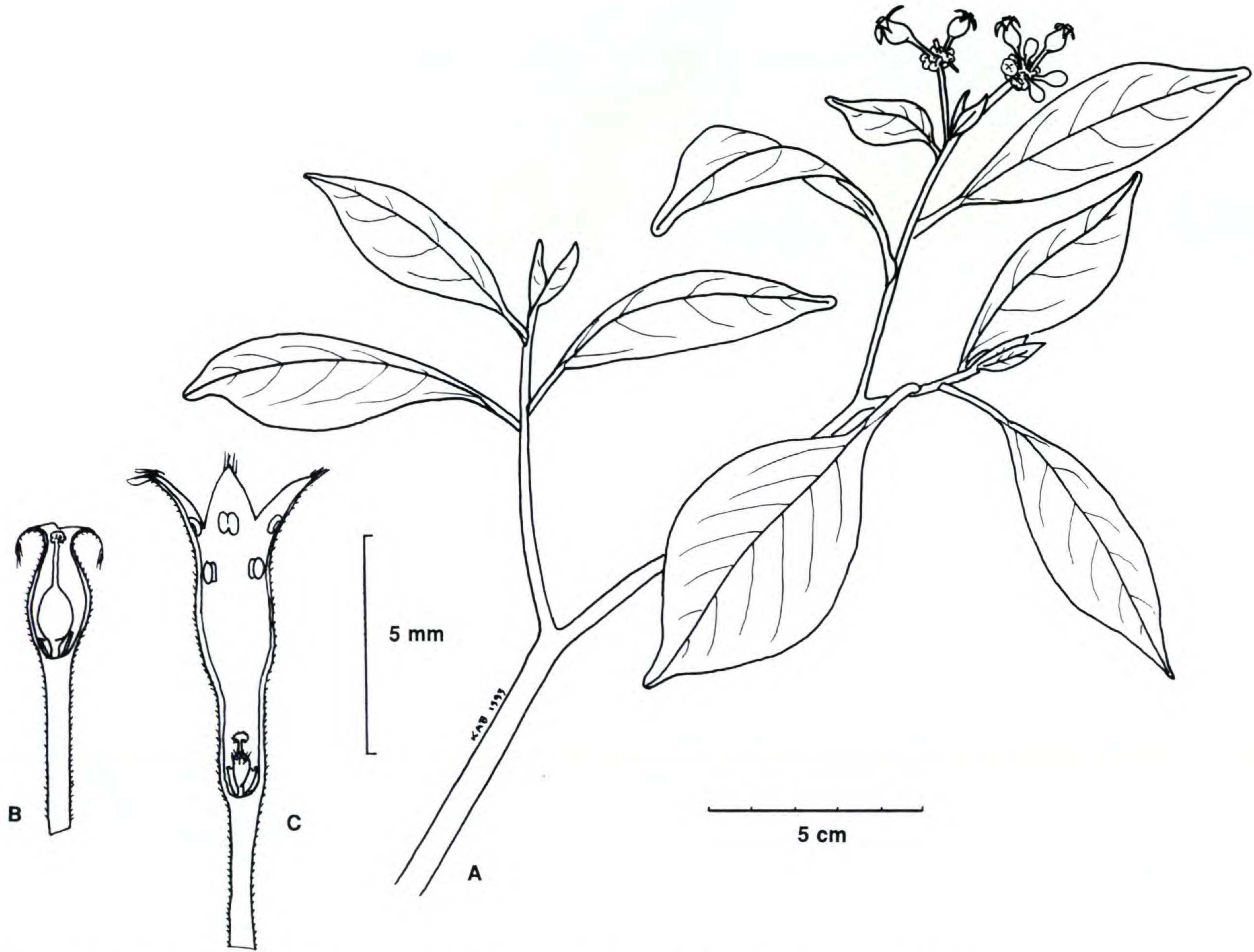


Figure 2. *Daphnopsis hammelii* Barringer & Nevling. —A. Habit. —B. Female flower. —C. Male flower.

The species differs from all other *Daphnopsis* by the densely bracteolate pistillate inflorescence. It is classified in subgenus *Daphnopsis* because of its dichotomous branching and extra-axillary inflorescences. It is similar to *D. hammellii* Barringer & Nevling, but differs from that species in having larger leaves and sessile flowers.

Paratypes. PANAMA. **Darién**: Cerro Pirre, 10–20 July 1977, *Folsom 4543* (MO). **Coclé**: lumber camp at Alto Calvario, 7 km N of El Copé, 900 m, *Folsom 1285* (MO); Alto Calvario, forest around Rivera sawmill, 7+ km N of El Copé, 700–900 m, 13 Dec. 1980, *Folsom 3276* (MO); area surrounding Rivera sawmill, Alto Calvario, 7 km N of El Copé, 700–850 m, 25 Nov. 1977, *Folsom & Collins 6515* (MO); N of El Copé near continental divide, 8°38'N, 80°35'W, 750 m, 8 Apr. 1988, *McPherson 12427* (MO); between Caña Susio and waterfall at base of Cerro Tife, NW of El Copé and El Petroso sawmill, 8°38'N, 80°36'W, 13 Dec. 1980, *Sytisma, Hahn & Antonio 2531* (MO).

Daphnopsis hammellii Barringer & Nevling, sp. nov. TYPE: Panama. Chiriquí: end of road past Palo Alto, NE of Boquete, in forest along ridge, 6,600 ft., 8 Feb. 1979, *Hammel 6065* (holotype, MO). Figure 2.

Species *D. anomala* inflorescentiis capitatis, hypanthiis masculinis anguste tubulosis hypanthiis femininis urceolatis diversa.

Tree or shrub, to 5 m tall; trunk to 30 cm DBH, bark reddish brown, becoming gray; stems dichotomously branched, sericeous, glabrescent. Leaves alternate; petioles 8–10 mm long, flattened above, sericeous to glabrescent; blade oblanceolate to lanceolate, 4–13 cm long, 2.2–4 cm wide, coriaceous to subcoriaceous, glabrous and dark green above, sericeous, glabrescent, and light green below, the base cuneate, the apex acute to acuminate, the venation obscure above, prominent below, with a marginal vein developed toward the apex. Staminate inflorescence racemose to capitate, sericeous; primary peduncle 2–2.5 cm long; rachis 1.7 mm long; secondary peduncle 1 mm long. Staminate flowers 35–50 per head; pedicel 4–5 mm long, sericeous; hypanthium narrowly tubular, greenish white, 8–10 mm long, flaring and 2 mm wide at the mouth, sericeous outside, glabrous within; calyx lobes triangular, 2 mm long, reflexed, glabrous within; petals absent; stamens 8, obdiplostemonous, the antise-palous whorl borne at the mouth of the hypanthium, exserted, the alternisepalous whorl borne 2 mm below the mouth of the hypanthium, included, the anthers ovoid, sessile, about 1 mm long; disc annular; pistillode bottle-shaped, 1 mm long, sericeous. Pistillate inflorescence terminal, capitate, sericeous; rachis 1–3 mm long; secondary pedicel 1 mm long.

Pistillate flowers 2–3 per inflorescence; pedicel 2–4 mm long; hypanthium urceolate, narrowed at the mouth, 2–3 mm long, 1–2 mm wide, sericeous; calyx lobes triangulate, 1–2 mm long, strongly recurved, glabrous within, with a tuft of trichomes at the apex; staminodes 4, minute; disc annular, less than 1 mm tall; pistil 1.0–1.5 mm long, borne on a gynophore less than 0.5 mm tall, the style 1 mm long, slightly exserted, the stigma capitate. Drupe green, ovoid, to 15 mm long, 8 mm wide, the apex obtuse.

This species is named for Barry Hammel of the Missouri Botanical Garden. It is only known from around Boquete in western Panama (Fig. 4). It is distinctive among the Panamanian species because of its capitate inflorescences, large, narrowly tubular, male flowers, and urceolate female flowers with a constriction at the mouth. It is classified in subgenus *Daphnopsis* and appears to be most closely related to the Colombian species *D. anomala* (Kunth) Nevling. *Daphnopsis hammellii* can be easily distinguished from that species by having capitate inflorescences and narrowly tubular hypanthia. It is similar to *D. folsomii* Barringer & Nevling, but that species differs in having larger leaves, sessile flowers, and densely bracteate pistillate inflorescences.

Paratypes. PANAMA. **Bocas del Toro**: NW of Cerro Pate Macho, 6,400 ft., 10 Feb. 1979, *Hammel 6104* (MO). **Chiriquí**: between Palo Alto and top of divide near Cerro Pate Macho, above Río Palo Alto, NE of Boquete, 5,400–7,100 ft., 18 Mar. 1979, *D'Arcy, Hammel & Averett 12653* (MO); end of road past Palo Alto, NE of Boquete, in forest along ridge, 6,200–6,800 ft., 8 Feb. 1979, *Hammel 6041* (MO); 3.5 mi. NE of Boquete, end of road along Río Palo Alto, 6,400 ft., 18 Nov. 1978, *Hammel 5696* (MO); end of road past Palo Alto NE of Boquete, 6,600 ft., 8 Feb. 1979, *Hammel 6065* (MO).

Daphnopsis morii Barringer & Nevling, sp. nov. TYPE: Panama. Chiriquí: N of San Félix, at the Chiriquí–Bocas del Toro border, on Cerro Colorado, copper mine road along the continental divide, 5,000–5,500 ft., 4 May 1975, *Mori & Kallunki 5889* (holotype, F; isotype, MO). Figure 3.

Species *Daphnopsis tuerckheimiana* affinis sed foliis longioribus 13–21 cm longis, pedunculo 5–8 mm longo, inflorescentiis sericeo, disco annulari.

Shrub to 1.5 m tall; young growth sericeous, glabrescent; older growth with a light brown cortex, the lenticels not prominent. Leaves alternate; petiole 7–10 mm long, slightly winged, glabrous; blade lanceolate to oblanceolate, 13–21 cm long, 4–6.5 cm

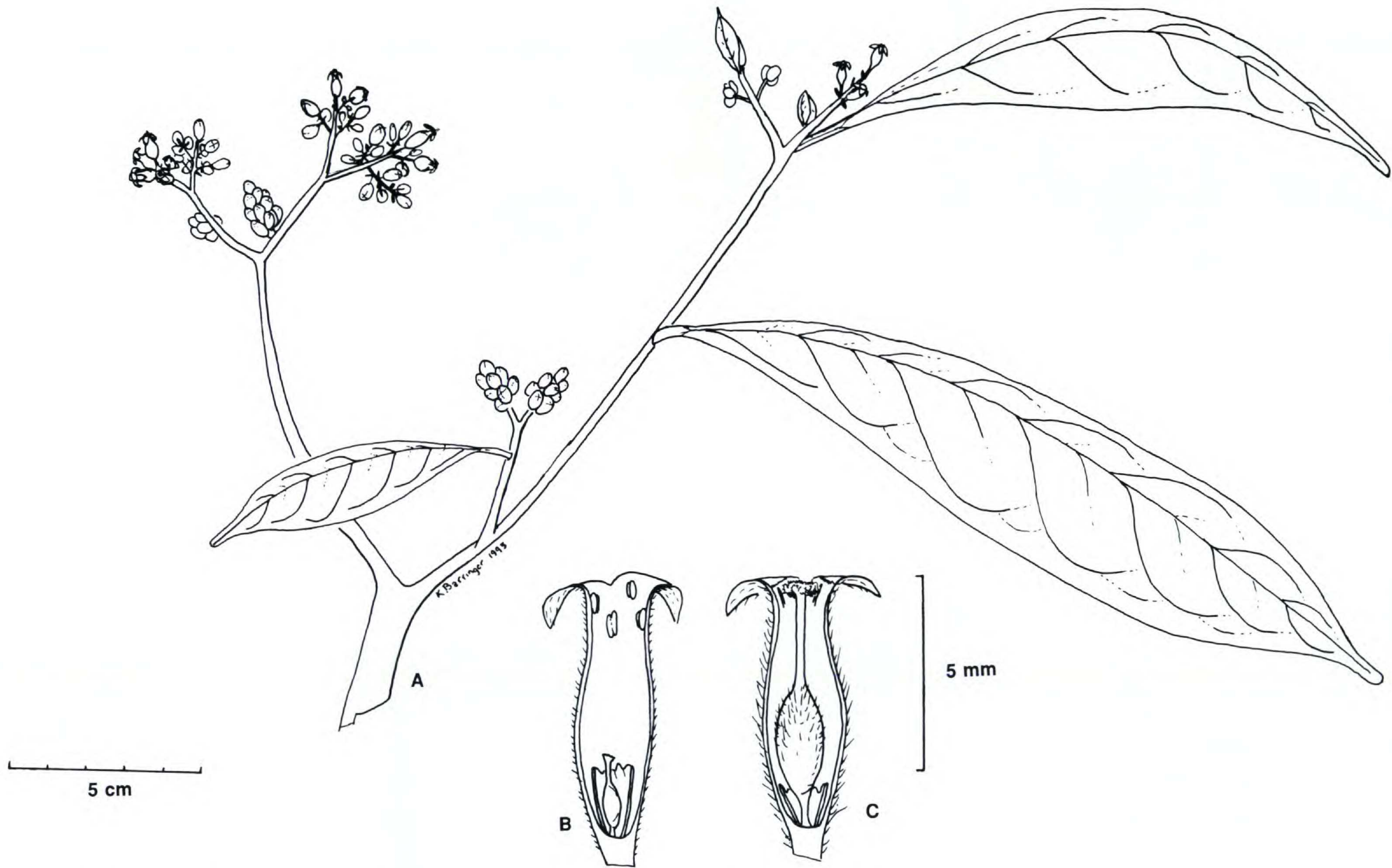


Figure 3. *Daphnopsis morii* Barringer & Nevling. —A. Habit. —B. Male flower. —C. Female flower.

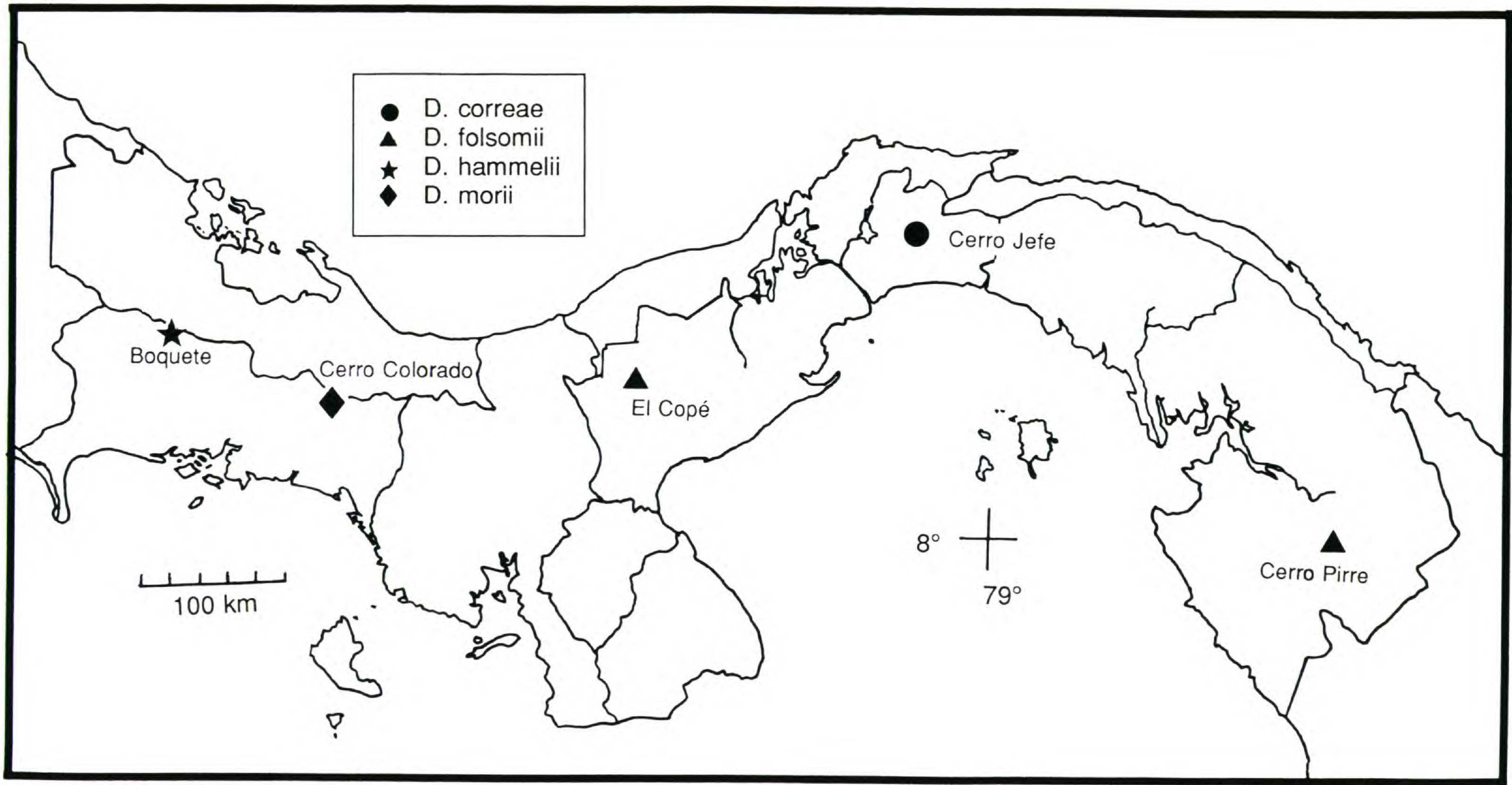


Figure 4. Distributions of *Daphnopsis correae*, *D. folsomii*, *D. hammelii*, and *D. morii*.

wide, subcoriaceous, glabrous and green above, light green and slightly pubescent on the veins below, the base cuneate, the margin slightly revolute when dry, the apex acuminate, the venation obscure above, prominent below, with a well-developed marginal vein. Staminate inflorescence capitate, sericeous; primary peduncle 0.5–0.8 mm long; rachis 1 mm long; secondary peduncle 1–2 mm long. Staminate flowers 6–12 per inflorescence; pedicel absent; hypanthium tubular, white, 5 mm long, 1.5–2 mm wide at the mouth, densely sericeous outside, glabrous within; calyx lobes 2 mm long, glabrous within; petals absent; stamens yellow, 8, obdiplostemonous, included, the antisepalous whorl inserted at the mouth of the hypanthium, the alternisepalous whorl inserted about 1.5 mm below the mouth of the corolla, the anthers ovoid, sessile, about 1 mm long, bright orange; disc annular, adnate to the gynophore; pistillode bottle-shaped, 1 mm long, glabrous, the gynophore 0.1–0.2 mm long. Pistillate inflorescences terminal, capitate to racemose, densely sericeous, the rachis 4–15 mm long, the bracts lanceolate, 4–8 mm long, sericeous. Pistillate flowers 6–12 per inflorescence; pedicel to 1 mm long; calyx tube tubular to urceolate, 5–6 mm long, 2 mm wide, sericeous; calyx lobes narrowly triangulate, 2 mm long, 1 mm wide at the base, recurved, glabrous within except for a ring of very short trichomes at the mouth; staminodes 4, less than 1 mm long; disc annular, lobulate, 0.5 mm tall; pistil 1.5–2 mm long, sericeous, borne on a gynophore 0.5 mm long, the style 3 mm long, slightly exerted, the stigma capitate. Drupes ovoid, white, 10–12 mm long, 8–9 mm wide, the apex acute.

This species is named for Scott Mori, of the New York Botanical Garden. It is known only from Cerro Colorado in western Panama (Fig. 4). It is classified in subgenus *Daphnopsis* and appears to be most closely related to *D. tuerckheimiana* but differs by having primary peduncles 5–8 mm long, an annular disc, a sericeous inflorescence, and leaves 13–21 cm long. *Daphnopsis americana* (Miller) Johnston subsp. *caribaea* (Grisebach) Nevling, the most common species in Panama, is easily distinguished by its branched inflorescences, anthers borne at the mouth of the hypanthium, and the presence of an annulus at the mouth of the hypanthium.

Paratypes. PANAMA. **Chiriquí:** Cerro Colorado, intersection of Bocas road with main road, 11.8 km from Chami, 1,400–1,700 m, 24 Oct. 1977, *Folsom 6107* (MO); Cerro Colorado, Bocas Road, 1,500 m, 17–18 Feb. 1977, *Folsom & Collins 1779* (MO); Cerro Colorado, road to Bocas del Toro, just above face of mine, 1,600–1,700 m, 14 Aug. 1977, *Folsom, Small & Robbins 4747* (MO); $\frac{1}{2}$ km N of Quebrada de Arena, Carretera de Oleoducta IRHE Fortuna Hydroelectric Project, 8°46'N, 82°12'W, 1,100 m, 12 Mar. 1982, *Knapp, Kress & Hammel 4029* (MO); Cerro Colorado, on road 35.6 km from Río San Felix bridge, 1,390 m, 15 July 1976, *Sullivan 404* (MO).

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